

AMENDMENT TO THE CLAIMS

The listing of claims, will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A method for defining a computer implemented factory automation lifecycle, the method comprising:
 - a) installing and administrating lifecycle activity framework components;
 - b) factory modeling lifecycle activity framework components; and
 - c) manufacturing controlling, monitoring and tracking lifecycle activity framework components for a plurality of fabrication tools that include a visual workflow component configured to execute at least one manufacturing process and at least one business process.
2. (Currently Amended) The method of claim 1, wherein said administrating lifecycle activity framework components comprise ~~comprises~~ ~~defining one or more framework components selected from the group consisting of a security component, a graphical user interface (GUI) console component, a performance and license management component and a saga management component.~~
3. (Currently Amended) The method of claim 1, wherein said factory modeling lifecycle activity framework components comprise ~~comprises~~ ~~defining one or more framework components selected from the group consisting of a context resolution component, a configuration management component and a calendar component.~~
4. (Currently Amended) The method of claim 1, wherein said manufacturing controlling, monitoring and tracking lifecycle activity framework components comprise ~~comprises~~ ~~defining one or more framework components selected from the group consisting of a visual workflow component, a resource coordination component, an event monitor component and a bill of resources component.~~

5. (Original) The method of claim 1 additionally comprising a method for defining one or more analyzing of manufacturing results lifecycle activity framework components.
6. (Original) The method of claim 5, wherein defining one or more analyzing of manufacturing results lifecycle activity framework components comprises defining a data manager component.
7. (Original) The method of claim 5 additionally defining a method for defining interactions between the one or more manufacturing results lifecycle activity framework components and components selected from the group consisting of factory modeling lifecycle activity framework components.
8. (Previously Presented) The method of claim 1 additionally defining a software (SW) developing and integrating lifecycle activity.
9. (Original) The method of claim 1 additionally defining a manufacturing planning lifecycle activity.
10. (Original) The method of claim 1 wherein defining a factory automation lifecycle comprises defining a factory automation lifecycle for processing an integrated circuit structure.
11. (Previously Presented) The method of claim 1, wherein defining a factory automation lifecycle additionally comprises defining framework components such that the framework components are adapted for communicating with a tool integration component, wherein the framework components are selected from the group consisting of installing and administrating lifecycle activity framework components, factory modeling lifecycle activity framework components, and manufacturing controlling, monitoring and tracking lifecycle activity framework components.
12. (Canceled)

Claims 13-35: Previously withdrawn from consideration

36. (Currently Amended) An apparatus for processing a product, the apparatus comprising:
- a) product processing equipment;
 - b) at least one central processing unit for electronic data processing;
 - c) a link for operably linking the central processing unit to the product processing equipment;
 - d) a memory for storing digitally coded data structures, wherein the memory is operably linked to the at least one central processing unit; and
 - e) a digitally coded first data structure stored in the memory wherein the data structure comprises a factory automation lifecycle including:
 - (1) administrating lifecycle activity framework components,
 - (2) factory modeling lifecycle activity framework components, and
 - (3) manufacturing, controlling and tracking lifecycle activity framework components for a plurality of wafer fabrication tools that include a visual workflow component configured to execute at least one manufacturing process and at least one business process.
37. (Currently Amended) The apparatus of claim 36, wherein the administrating lifecycle activity framework components comprise ~~one or more framework components selected from the group consisting of a security component, a graphical user interface (GUI) console component, a performance and license management component and a saga management component.~~
38. (Currently Amended) The apparatus of claim 36, wherein the factory modeling lifecycle activity framework components comprise ~~one or more framework components selected from the group consisting of a context resolution component, a configuration management component and a calendar component.~~

39. (Currently Amended) The apparatus of claim 36, wherein the manufacturing controlling and tracking lifecycle activity framework components comprise one or more framework components selected from ~~the group consisting of a visual workflow component,~~ a resource coordination component, an event monitor component and a bill of resources component.
40. (Original) The apparatus of claim 36 additionally comprising one or more analyzing of manufacturing results lifecycle activity framework components.
41. (Original) The apparatus of claim 40, wherein the one or more analyzing of manufacturing results lifecycle activity framework components comprise a data manager component.
42. (Original) The apparatus of claim 36 additionally comprising a digitally coded second data structure including application components, wherein the first data structure is adapted for managing the second data structure.
43. (Original) The apparatus of claim 42 additionally comprising a digitally coded third data structure including software building blocks for forming one or more of the framework components.
44. (Previously Presented) The apparatus of claim 36, wherein the first data structure comprises:
 - a) a digitally coded fourth data structure including a graphical user interface (GUI) console component; and
 - b) a digitally coded fifth data structure including a configuration management component.
45. (Original) The apparatus of claim 44, wherein the fourth and fifth data structures are adapted for interacting.
46. (Original) The apparatus of claim 36 wherein the link comprises a tool integration component including: (1) a tool integration component adapter and (2) a tool interface program

47. (Original) The apparatus of claim 36 comprising an apparatus for processing an integrated circuit structure.

Claims 48-55: Previously withdrawn from consideration

56. (Currently Amended) A data storage device comprising a digitally coded first data structure including a factory automation lifecycle having:
- a) administrating lifecycle activity framework components;
 - b) factory modeling lifecycle activity framework components; and
 - c) manufacturing controlling and tracking lifecycle activity framework components for a plurality of wafer fabrication tools that include a visual workflow component configured to execute at least one manufacturing process and at least one business process.
57. (Currently Amended) The device of claim 56, wherein the administrating lifecycle activity framework components comprise ~~one or more framework components selected from the group consisting of a security component, a graphical user interface (GUI) console component, a performance and license management component and a saga management component.~~
58. (Currently Amended) The device of claim 56, wherein the factory modeling lifecycle activity framework components comprise ~~one or more framework components selected from the group consisting of a context resolution component, a configuration management component and a calendar component.~~
59. (Currently Amended) The device of claim 56, wherein the manufacturing controlling and tracking lifecycle activity framework components comprise one or more framework components selected from ~~the group consisting of a visual workflow component, a resource coordination component, an event monitor component and a bill of resources component.~~

60. (Original) The device of claim 56 additionally comprising one or more analyzing of manufacturing results lifecycle activity framework components.
61. (Original) The device of claim 60, wherein the one or more analyzing of manufacturing results lifecycle activity framework components comprise a data manager component.
62. (Previously Presented) The device of claim 56 comprising a plurality of framework components which are adapted for interacting with a graphical user interface (GUI) console framework component.
63. (Original) The device of claim 56 additionally comprising a digitally coded second data structure including application components, wherein the first data structure is adapted for managing the second data structure.
64. (Original) The device of claim 63 additionally comprising a digitally coded third data structure including software building blocks for forming one or more of the framework components.
65. (Original) The device of claim 64 wherein the first, second and third data structures are adapted for processing an integrated circuit structure.

Claims 66-69: Previously withdrawn from consideration.

70. (Currently Amended) A method for defining a computer implemented automation lifecycle of a factory, the method comprising the steps of:
 - a) defining software components relating to a lifecycle activity framework for automating the factory comprising a plurality of wafer fabrication tools; and
 - b) installing and controlling the defined software components that include a visual workflow component configured to execute at least one manufacturing process and at least one business process.

71. (Previously Presented) The method of claim 70, wherein the software components include a manufacturing execution system.
72. (Currently Amended) A computer implemented method of automating a factory for manufacturing semiconductor devices, the method comprising the acts of:
- a) developing and installing control software for automating the factory;
 - b) modeling tools and manufacturing processes of the factory;
 - c) generating a plan to manufacture one or more semiconductor devices;
 - d) controlling, tracking and monitoring manufacture of the semiconductor devices according to the plan;
 - e) analyzing manufacturing results, wherein at least one of acts a), b) and c) is modified based on the results; and
 - f) constructing one or more framework components configured to allow a user to conduct acts a)-e), wherein said framework components include a visual workflow component.
73. (Previously Presented) The method of claim 72 further comprises the act of:
- g) allowing the one or more framework components to access features of the tools and manufacturing processes of the factory with one or more generalized commands.
74. (Previously Presented) The method of claim 73 further comprises the act of:
- h) providing an interface between the one or more framework components and the tools of the factory, wherein the providing the interface includes the act of:
 - translating the one or more generalized commands to commands adapted to control one or more of the tools of the factory.
75. (Previously Presented) The method of claim 72 further comprising the act of:
- providing common service protocols among a plurality of components of the one or more framework components.

76. (Currently Amended) The method of claim 75 further comprising the act of:
- configuring the one or more framework components to be capable of including one or more of:
- a configuration management component;
- ~~a visual/work flow component;~~
- a data manager component;
- an event monitor component;
- a GUI console component; and
- a security component.
77. (Previously Presented) The method of claim 75 further comprising the act of:
- configuring a configuration management component to manage the act of (b) modeling tools and manufacturing processes of the factory.
78. (Currently Amended) The method of claim 75 further comprising the act of:
- ~~providing a visual/work flow component to manage the act of d) controlling, tracking and monitoring manufacture of the semiconductor devices according to the plan~~
performance and license management component.
79. (Previously Presented) The method of claim 75 further comprising the act of:
- providing a data manager component to manage the act of e) analyzing manufacturing results, wherein at least one of acts a), b) and c) is modified based on the results.
80. (Previously Presented) The method of claim 75 further comprising the act of:
- providing an event monitor component to manage the act of d) controlling, tracking and monitoring manufacture of the semiconductor devices according to the plan.

81. (Previously Presented) The method of claim 75 further comprising the act of:
- providing a GUI console component to manage the acts of a) developing and installing control software for automating the factory and f) constructing one or more framework components configured to allow a user to conduct acts a)-e).
82. (Currently Amended) The method of claim 75 further comprising the act of:
- configuring the one or more framework components to be capable of including any one or more of:
- a configuration management component;
- ~~a visual/work flow component;~~
- a data manager component;
- an event monitor component;
- a GUI console component;
- a security component;
- a equipment management component; sample application
- a work-in-progress management component;
- a dispatching and scheduling component;
- a quality management component;
- a tool integration component; and
- a gateway component.
83. (Currently Amended) A computer implemented method of automating a factory for manufacturing semiconductor devices, the method comprising the acts of:
- constructing a software framework configured to conduct a plurality of lifecycle activities, wherein the lifecycle activities comprise:
- a) developing and integrating control software for automating the factory;
- b) installing and administrating the control software;

- c) modeling tools of the factory;
 - d) generating a plan to manufacture semiconductor devices;
 - e) controlling, tracking and monitoring manufacture of the semiconductor devices according to the plan; and
 - f) analyzing manufacturing results, wherein at least one of acts a), c) and d) is modified based on the results, wherein said software framework includes a visual workflow component.
84. (Previously Presented) The method of claim 83, wherein the act b) further comprises modeling manufacturing processes of the factory.
85. (Previously Presented) The method of claim 83 further comprises the act of:
- g) allowing the software framework to access features of the tools of the factory with one or more generalized commands.
86. (Previously Presented) The method of claim 85 further comprises the act of:
- h) providing an interface between the software framework and the tools of the factory, wherein the providing the interface includes the act of:
 - translating the generalized commands to commands adapted to control one or more the tools of the factory.
87. (Previously Presented) The method of claim 83 further comprising the act of:
- providing common service protocols among a plurality of components of the software framework.
88. (Currently Amended) The method of claim 87 further comprising the act of:
- configuring the software framework to be capable of including one or more of:
 - a configuration management component;
 - ~~a visual/work flow component;~~
 - a data manager component;

- an event monitor component;
 - a GUI console component; and
 - a security component.
89. (Previously Presented) The method of claim 87 further comprising the act of:
- configuring a configuration management component to manage the act of (b) modeling tools of the factory.
90. (Currently Amended) The method of claim 87 further comprising the act of:
- ~~providing a performance and license management component~~ ~~a visual/work flow component to manage the act of d) controlling, tracking and monitoring manufacture of the semiconductor devices according to the plan.~~
91. (Previously Presented) The method of claim 87 further comprising the act of:
- providing a data manager component to manage the act of e) analyzing manufacturing results, wherein at least one of acts a), b) and c) is modified based on the results.
92. (Previously Presented) The method of claim 87 further comprising the act of:
- providing an event monitor component to manage the act of d) controlling, tracking and monitoring manufacture of the semiconductor devices according to the plan.
93. (Previously Presented) The method of claim 87 further comprising the act of:
- providing a GUI console component to manage the acts of a) developing and installing control software for automating the factory and f) constructing a software framework configured to allow a user to conduct acts a)-e).
94. (Currently Amended) The method of claim 87 further comprising the act of:
- configuring the software framework to be capable of including any one or more of:
 - a configuration management component;

~~— a visual/work flow component;~~

a data manager component;

an event monitor component;

a GUI console component;

a security component;

a equipment management component; sample application;

a work-in-progress management component;

a dispatching and scheduling component;

a quality management component;

a tool integration component; and

a gateway component.

95. (Currently Amended) A computer implemented system for automating a factory for manufacturing semiconductor devices, the system comprising:

a software framework configured to conduct a plurality of lifecycle activities, wherein the software framework comprises:

- a) means for developing and integrating control software for automating the factory;
- b) means for installing and administrating the control software;
- c) means for modeling tools and manufacturing processes of the factory;
- d) means for modeling manufacturing processes of the factory;
- e) means for generating a plan to manufacture semiconductor devices;
- f) means for controlling, tracking and monitoring manufacture of the semiconductor devices according to the plan; and

g) means for analyzing manufacturing results, wherein at least one of acts a), c) and d) is modified based on the results wherein said software framework includes a visual workflow component.

96. (Previously Presented) The system of claim 95 further comprising:

h) an interface configured to allow the software framework to access features of the tools of the factory with one or more generalized commands.

97. (Previously Presented) The system of claim 96 wherein the interface is configured to translate the generalized commands to commands adapted to control one or more the tools of the factory.

98. (Previously Presented) The system of claim 95 further comprising:

common service protocols among a plurality of components of the software framework.

99. (Currently Amended) The system of claim 98 the software framework to be capable of including one or more of:

a configuration management component;

~~— a visual/work flow component;~~

a data manager component;

an event monitor component;

a GUI console component; and

a security component.

100. (Previously Presented) The system of claim 98 further comprising:

a configuration management component configured to manage the act of (b) modeling tools and manufacturing processes of the factory.

101. (Currently Amended) The system of claim 98 further comprising:

a performance and license management component~~visual/work flow~~
~~component configured to manage the act of d) controlling, tracking and monitoring~~
~~manufacture of the semiconductor devices according to the plan.~~

102. (Previously Presented) The system of claim 98 further comprising:

a data manager component to configured to manage the act of e) analyzing
manufacturing results, wherein at least one of acts a), b) and c) is modified based on
the results.

103. (Previously Presented) The system of claim 98 further comprising:

an event monitor component configured to manage the act of d) controlling,
tracking and monitoring manufacture of the semiconductor devices according to the
plan.

104. (Previously Presented) The system of claim 98 further comprising:

a GUI console component configured to manage the acts of a) developing and
installing control software for automating the factory and f) constructing a software
framework configured to allow a user to conduct acts a)-e).

105. (Currently Amended) The system of claim 98 wherein the software framework is
capable of including any one or more of:

a configuration management component;

~~— a visual/work flow component;~~

a data manager component;

an event monitor component;

a GUI console component;

a security component;

a equipment management component; sample application;

- a work-in-progress management component;
- a dispatching and scheduling component;
- a quality management component;
- a tool integration component; and
- a gateway component.

106. (Currently Amended) A computer readable medium for storing instructions being executed by one or more computers, the instructions directing the one or more computers for automating a factory for manufacturing semiconductor devices, the instructions comprising the acts of:

constructing a software framework configured to conduct a plurality of lifecycle activities, wherein the lifecycle activities comprise:

- a) developing and integrating control software for automating the factory;
- b) installing and administrating the control software;
- c) modeling tools of the factory;
- d) generating a plan to manufacture semiconductor devices;
- e) controlling, tracking and monitoring manufacture of the semiconductor devices according to the plan; and
- f) analyzing manufacturing results, wherein at least one of acts a), c) and d) is modified based on the results, wherein said software framework includes a visual workflow component.

107. (Previously Presented) The medium of claim 106, wherein the act b) further comprises modeling manufacturing processes of the factory.

108. (Previously Presented) The medium of claim 106 further comprises the instructions for the act of:

- g) allowing the software framework to access features of the tools of the factory with one or more generalized commands.

109. (Previously Presented) The medium of claim 108 further comprises the instructions for the act of:

h) providing an interface between the software framework and the tools of the factory, wherein the providing the interface includes the act of:

translating the generalized commands to commands adapted to control one or more the tools of the factory.

110. (Previously Presented) The medium of claim 106 further comprising the instructions for the act of:

providing common service protocols among a plurality of components of the software framework.

111. (Currently Amended) The medium of claim 110 further comprising the instructions for the act of:

configuring the software framework to be capable of including one or more of:

a configuration management component;

~~— a visual/work flow component;~~

a data manager component;

an event monitor component;

a GUI console component; and

a security component.

112. (Previously Presented) The medium of claim 110 further comprising the instructions for the act of:

configuring a configuration management component to manage the act of (b) modeling tools of the factory.

113. (Currently Amended) The medium of claim 110 further comprising the instructions for the act of:

providing a ~~performance and license management component~~ visual/work flow component to manage the act of d) controlling, tracking and monitoring manufacture of the semiconductor devices according to the plan.

114. (Previously Presented) The medium of claim 110 further comprising the instructions for the act of:

providing a data manager component to manage the act of e) analyzing manufacturing results, wherein at least one of acts a), b) and c) is modified based on the results.

115. (Previously Presented) The medium of claim 110 further comprising the instructions for the act of:

providing an event monitor component to manage the act of d) controlling, tracking and monitoring manufacture of the semiconductor devices according to the plan.

116. (Previously Presented) The medium of claim 110 further comprising the instructions for the act of:

providing a GUI console component to manage the acts of a) developing and installing control software for automating the factory and f) constructing a software framework configured to allow a user to conduct acts a)-e).

117. (Currently Amended) The medium of claim 110 further comprising the instructions for the act of:

configuring the software framework to be capable of including any one or more of:

a configuration management component;

— a visual/work flow component;

- a data manager component;
- an event monitor component;
- a GUI console component;
- a security component;
- a equipment management component; sample application;
- a work-in-progress management component;
- a dispatching and scheduling component;
- a quality management component;
- a tool integration component; and
- a gateway component.

118. (New) The method according to claim 72, wherein the visual workflow component is configured to execute at least one manufacturing process and at least one business process.
119. (New) The method according to claim 83, wherein the visual workflow component is configured to execute at least one manufacturing process and at least one business process.
120. (New) The system according to claim 95, wherein the visual workflow component is configured to execute at least one manufacturing process and at least one business process.
121. (New) The medium according to claim 106, wherein the visual workflow component is configured to execute at least one manufacturing process and at least one business process.
122. (New) A method for defining a computer implemented factory automation lifecycle, the method comprising:
- a) installing and administrating lifecycle activity framework components;
 - b) factory modeling lifecycle activity framework components; and

- c) manufacturing controlling, monitoring and tracking lifecycle activity framework components that include a visual workflow component.
123. (New) The method of claim 122, wherein said administrating lifecycle activity framework components comprise a performance and license management component.
124. (New) The method of claim 122, wherein said factory modeling lifecycle activity framework components comprise a configuration management component.
125. (New) The method of claim 122, wherein the visual workflow component is configured to execute at least one manufacturing process and at least one business process